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L14	L13 and I3	1	L14
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L5	anti inflammatory or antiinflammatory	63112	L5
L4	autologous cell or (fat near cell) or (muscle near cell) or (subcutaneous near cell) or (dermal near cell) or (epidermal near cell)	13673	L4
L3	sodium acrylate polymer	199	L3
L2	contrast agent	6119	L2
L1	microsphere or granule or spherical particle	199486	L1

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Industrial Application] Since in more detail carries out the plug of the particular part of a vessel about the suspension for vessel plugs, it is related with the suspension for vessel plugs poured in through a catheter by this invention.

[0002]

[Description of the Prior Art] Cyanoacrylates (cyanoacrylate) (isobutyl-2-cyanoacrylate, n-butyl cyanoacrylate) used for the artery plug way, especially the plug way of the condition pulse deformity in a skull conventionally Although it accepts as useful plug matter Experience is taken to adjust concentration etc., in order to carry out a polymerization by nidus (short circuit portion of condition pulse deformity), A polymerization is often carried out within a catheter, and lock out of a catheter is caused or it has a fault, like there is risk of Cyanoacrylates which carried out the polymerization to the catheter causing adhesion. Although the method of pouring in little Cyanoacrylates in several steps is also proposed in order to solve an adhesive problem, there is no change in being careful careful. Although EVAL (Ethylene Vinyl Alcohol Copolymer) is used with many institutions in order to compensate the fault of these cyanoacrylates(es), an organic solvent is needed and development of the plug matter which does not have toxicity that conformity with a catheter may be bad and it is easy to treat it is desired. On the other hand, it is Polyvinyl to plug material. Although there are also many reports using Alcohol (PVA) or a suture, since a catheter is often blockaded and the plug of the artery is further carried out by the center side, the rate of re-opening of traffic of condition pulse deformity is high, and the material which can carry out a plug in the place near nidus if possible is desirable. For this reason, the device of they using mixing Ethanol and Avitene (microfibrillarcollaten) is required. It is mentioned that the conditions for which the plug matter is asked on the occasion of the plug way in a skull in this way pass a very fine catheter, that imaging nature is good, not passing nidus, having the permanent plug effect, and that there is no toxicity.

[0003]

[Means for Solving the Problem and its Function] This invention is suspension for vessel plugs which makes oily contrast media come to suspend the water-absorbing resin particle which makes a principal component the polymer of acrylic-acid soda, or the polymer of acrylic soda and vinyl alcohol, and sets a mean particle diameter to about 1.0mm or less. Namely, this invention is the thing on which it is going to make a vessel act as plug matter using what is done for water absorption swelling in an instant when a water-absorbing resin particle meets with moisture (inner moisture), i.e., blood, (for example, one 1000 times the moisture of a self-weight is absorbed and swollen). Furthermore, the above-mentioned water absorption swelling is delayed and it is made for the operation as plug matter to take place only in the part of a request of a vessel instead of the interior of a catheter, or a catheter adjoining part by making oily contrast media suspend the water-absorbing resin particle.

[0004] The water-absorbing resin particle used in this invention makes a principal component the polymer of acrylic-acid soda, or the polymer of acrylic-acid soda and vinyl alcohol. A vinyl acetate-acrylic-ester copolymer saponification object, a vinyl acetate-maleic-acid methyl copolymer saponification object, an ISO butylene-maleic-anhydride copolymer bridge formation object, a starch-acrylic nitril graft copolymer saponification object, a bridge formation sodium polyacrylate, the bridge formation object of a polyethylene oxide, etc. are mentioned as an example especially as these principal components.

[0005] What these water-absorbing resin particles set a mean particle diameter to about 1.0mm or less, and is preferably set to 0.9mm or less is used. Furthermore, the plug of the request part of a vessel can be carried out by choosing these mean particle diameters suitably.

[0006] In this invention, oily contrast media are made to suspend these water-absorbing resin particles, and it considers as suspension. In this case, it is desirable to make 10-20mg of water-absorbing resin particles suspend to 1ml of oily contrast media. The contrast medium [an ANGIOGURA fin (registered trademark)] containing the contrast medium [a UROGURA fin (registered trademark)] which contains the contrast medium [gold / gold / RIPIO / (registered trademark)] which consists of iodine-ized Ken oil fatty-acid ethyl ester, amidotrizoic acid, a sodium hydroxide, and the meglumine as these oily contrast media (as an anhydride), amidotrizoic acid, and the meglumine etc. is mentioned (as an anhydride). The obtained suspension flows to the tip of a vessel, where a water-absorbing resin particle is wrapped in oily contrast media, when poured into the specific part (for example, artery) of a vessel by the catheter, if the oil content of a coat leaves it there and it meets with the moisture in blood, it will absorb moisture (for example, 2 to 3 seconds) in an instant, it increases a diameter, and acts as plug (for example, 4.5 times) matter.

[0007] The example of use of the suspension for vessel plugs which starts this invention below is given.

[0008] b) What has the scarce example vessel of a plug of a malignant tumor N-100 (S) and suspension of gold one RIPIO

(10mg/(ml))

What has an abundant vessel N-100 (M) or N-100 (L), and suspension of gold one RIPIO (10mg/(ml))

However it mixes S-50 with N-100 and makes the suspension of gold one RIPIO (10-15mg/(ml)), an N-100:acrylic-acid soda polymer, an S-50:acrylic acid and a vinyl alcohol copolymer, (S), (M), and (L) show the size of a particle, and are 0.20mmphi, 0.53mmphi, and 0.88mmphi in a mean particle diameter in order.

[0009] b) Example Low of a plug of the arteriovenous aneurysm (AVM) Flow Suspension of Type:N -100 (S) and PIODORU (10mg/(ml))

High Flow S-50 is mixed with Type:N -100, and the suspension of gold one RIPIO is made (10-15mg/(ml)).

[0010] c) S-50 of a somewhat larger path than the path of the vessel in which the arteriorrhagia is carrying out example bleeding of a plug -- some -- every -- obtain a number, make it suspend with a contrast medium, and pour in the suspension until bleeding stops

[0011]

[Example]

an example 1 -- in order to confirm that the suspension for vessel plugs concerning this invention actually has the plug effect, the plug vessel model (1) like drawing 1 supposing the arteriovenous aneurysm was produced A plug vessel model (1) is filled up with the urethane-foam sponge (open-cell object) (3) of a cylindrical shape (a height of 2mm, diameter of 18mm) into a plastics chamber (2) with a capacity of about 2.0ml. Blood passes this chamber (2) without resistance. This plug vessel model (1) The bottle (4) of 500 to 1,000ml physiological sodium chloride solution was connected, the automatic pressurizer (5) was used for this bottle, the constant ordinary pressure of 150mmHg(s) was applied, and the steady flow was passed to the chamber (2). In addition, (6) is a pressure gage and (7) is a micro catheter. the following two kinds were filled up with **'s as urethane-foam sponge That is, low flow type: Opening an average of 0.5 mmhigh(s) of an urethane foam flow type: The rate of flow of an average of 0.9mm physiological sodium chloride solution of opening of an urethane foam was measured, and the plug effect was judged.

[0012] b) low flow type AVM Plug of model (refer to drawing 1 , drawing 2 , and drawing 4)

If the suspension of the 76% UROGURA fin and the RIPIO gold mixed liquor of N-100 (S) is used, an N-100(S) 40mg ***** halt will be carried out. On the other hand, if N-100 (M) is used, a stream halt will be carried out by 5mg or less by the same suspension. It is easy to get it blocked, so that the particle diameter is so large that there are many amounts of N-100.

[0013] b) high flow type AVM Plug of model (refer to drawing 1 , drawing 2 , and drawing 5)

The plug effect is not accepted in the suspension of the 76% UROGURA fin and the RIPIO gold mixed liquor of N-100 (M). The plug effect shows up by adding S-50 (M). N-100 (L) It appears in the plug effect in 10mg small quantity + S-50 (L). N-100 (S) There is no plug effect + S-50 (S). N-100 (S) -- if + S-50 (S) is made to suspend with an ANGIOGURA fin -- the particle of S-50 -- **** -- as soon as it hears, it comes to have the plug effect It is very important to mix S-50 to the plug of AVM with a quick blood flow by these.

[0014] Woman of 26 years old of clinical example I After [abortion] metrorrhagia pelvis arteriography: The unusual vessel spirally extended in accordance with the uterus is accepted to be extension of a right uterine artery. Moreover, exsorption of a contrast medium was accepted in the outside of the blood vessel, and bleeding has been checked.

Alternative right uterine artery: It is imaging by inserting a catheter in a right uterine artery alternatively.

Alternative right uterine-artery imaging (after the operation [plug]): Photography was performed, after making S-50(M)5mg absorb water with arrangement brine, making gold [RIPIO] suspend and pouring in from a catheter. An unusual vessel disappears, exsorption of a contrast medium is also no longer accepted in the outside of the blood vessel, and only normal uterine-artery muscles are extracted. After the operation and the bleeding from a uterus stopped.

It will be as follows if the features as plug matter at the time of using the suspension for vessel plugs which starts this invention above are enumerated.

b) : without toxicity and stimulative one -- about this point, there are already data It does not become especially a problem as long as it imagines from research of the organization reaction of the conventional plug matter. At clinical experience of ten examples, there is no ache at the time of pouring.

b) ***** -- low: -- if it is not the suspension of the very high concentration in a grade somewhat higher than ***** of gold one RIPIO, it can let it pass with a micro catheter with a 1.0ml syringe

c) : with sufficient imaging nature -- since it is using gold [RIPIO] as suspension, it can be very clearly seen under transillumination Moreover, the plug effect is confirmed because gold [RIPIO] stores in a plug part.

d) Since there is no property in which blockade and :particle which is not condenses a catheter, don't block a catheter. Since there is no adhesive property, there is no risk of a catheter and a vessel pasting up.

e) : which can adjust a plug part -- the size of a particle can be adjusted The method adjusts the size of a particle with the contrast medium which adjusts by (S), (M), and (L), or is made to suspend. By this, the diameter of a vessel which can carry out a plug beforehand can be decided.

[0015]

[Effect of the Invention] If the suspension for vessel plugs concerning this invention is used, ***** is low, imaging nature will be good, and will not blockade [there will not be toxicity and stimulative one,] a catheter, but the effect that a plug part can moreover be adjusted will be acquired.

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CLAIMS

[Claim(s)]

[Claim 1] Suspension for vessel plugs which makes oily contrast media come to suspend the water-absorbing resin particle which makes a principal component the polymer of acrylic-acid soda, or the polymer of acrylic soda and vinyl alcohol, and sets a mean particle diameter to about 1.0mm or less.

[Translation done.]